UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/957,472	09/21/2001	Tetsuya Hanamoto	204552021500	4058

25227 7590 11/13/2002

MORRISON & FOERSTER LLP
2000 PENNSYLVANIA AVE, NW
SUITE 5500
WASHINGTON, DC 20006-1888

EXAMINER
BAUMEISTER, BRADLEY W

ART UNIT	PAPER NUMBER
2815	9

DATE MAILED: 11/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

FINAL

Office Action Summary	Application No. 09/957,472	Applicant(s) Hanamoto et al.
	Examiner B. William Baumeister	Art Unit 2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Sep 12, 2002*.

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-71* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-71* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 5, 7, 9 and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Vriens et al. '753. Vriens discloses LEDs mounted on a base substrate such as a lead-frame cup or recess with a reflector/mirror surface 23, 33, 43. The LED emits UV/blue light, preferably of wavelengths of 390 nm or longer (col. 7, line 1-), which in turn, is absorbed by phosphors (fluorescent substance) that re-emit secondary light in the visible range (i.e., in the range of about 410-670 nm), for producing any desired color such as red, green, blue or white (col. 1, line 55-60). Primary UV/blue wavelengths of 390 nm or longer are preferred to protect viewers and the encapsulants from UV damage (col. 7, lines 1-). Short wave filters and long wave filters may also be employed.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 4, 6, 8 and 65-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens et al. '753 as applied to the claims above, and further in view of the Phosphor Handbook, 1998, pp. 391-392. Vriens discloses that phosphors can be employed for emitting any of various visible wavelengths or combinations thereof, including R, G and B, but does not recite any specific phosphors that may be employed.

a. The Phosphor Handbook includes a list of conventional phosphors and their associated emitted colors. See e.g., the compositions numbered therein as 2-5, 3-1, 4-3 to 4-5, 7-1, 7-2 and 7-6 which read on various phosphor compositions set forth in the Markush groups of the stated claims. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed any one of these conventional phosphors in the Vriens device for the purpose of obtaining the specific secondary wavelength emissions as taught by the Phosphor Handbook and as desired by Vriens.

b. Regarding claims 66 and 67, it would have been obvious to one of ordinary skill in the art at the time of the invention to have further employed the specific phosphor compositional ratios set forth in these claims because Vriens teaches the general condition/goal of producing a resultant white light (e.g., by blending R, G and B phosphors), and given that the Phosphor Handbook teaches the specific phosphors that produce these colors, one skilled in the art could

have readily determined the proper ratios through routine experimentation, since the effects of color blending were well understood at the time of the invention.

c. Regarding claims 68-71, Vriens teaches that the devices further have a glass (light guide) plate 26, 36, 46, 56; can be used in an LCD display (col. 4, line 30); and that they may possess various wavelength filters. Regardless of whether this disclosure is specific enough to read on filters having a composition to filter out specific ones of the phosphor wavelengths, it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed such specific filters since Vriens discloses that the device may be employed for emitting white light and for LCDs. This is because it was well known at the time of the invention that RGB full-color displays are generally made from only one of two methods: (1) proving three light emitters which respectively emit R, G and B; or (2) providing three white emitters and respectively filtering G,B; R,B and R,G out of each to respectively obtain R,G,B. The former method has the advantage of eliminating the need for color filters; the latter method has the advantage of eliminating the need to produce LEDs with three different phosphor compositions, thereby increasing the economy of scale of the front end of the manufacturing process. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed either of these methods depending only upon convention business considerations such as the manufacturing costs associated with each of the methods.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens et al. '753 as applied to the claims above, and further in view of Vecht et al. '585. Vriens discloses that phosphors can be employed for emitting any of various visible wavelengths, but does not recite any specific phosphors that may be employed.

a. Vecht discloses methods of producing various sulfide phosphors that can be used in photoluminescent applications (col. 1, line 10). ZnS:Mn is one of the phosphors disclosed (col. 2, line 21). It would have been obvious to one of ordinary skill in the art at the time of the invention to have specifically employed ZnS:Mn as a phosphor in the Vriens device depending only upon the specific wavelength desired (i.e., orangish), as Vecht teaches that ZnS:Mn phosphors can be employed for photoluminescent applications.

6. Claims 11-63 are rejected under 35 U.S.C. 102(b) as anticipated by Vriens et al. '753 as applied to the claims above or, in the alternative, under 35 U.S.C. 103(a) as obvious over Vriens et al. '753 as applied to the claims above and further in view of Komoto et al. '824.

a. Claims 11-63 are directed towards various substrate/wiring/reflector compositions/arrangements, manners of interconnecting the LED thereto, the presence of sealants/encapsulants, and various dispositional relationships of the phosphors relative to the sealant/encapsulant and LED.

b. Vriens teaches that the phosphor-coated LED/reflector combination can be provided in various embodiments and include various modifications (see FIGs 1-5), and various

ones of specific embodiments claimed by Applicant are disclosed by Vriens. However, with respect to any of those embodiments not specifically taught by Vriens, Komoto teaches an extensive array of conventional configurations for encapsulated LED chips that include UV LEDs in combination with downconverting phosphors mounted on various substrates such as reflectors, recessed lead frames, and other wired substrates. To the extent these claims are not anticipated by Vriens, it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed any one of the specific configurations taught by Komoto depending only upon conventional business considerations such as the specific lighting application desired (e.g., the desired resultant light-emission solid angle) and the respective manufacturing costs associates with any one of these embodiments.

Response to Arguments

7. Applicant's arguments filed 9/12/2002 have been fully considered but they are not persuasive.

a. Applicant has argued that Vriens does not anticipate the claims because it fails to disclose that the primary light emitting element may emit light within the range of 390-420 nm. This argument is not persuasive because, as applicant admits, Vriens teaches that the primary light emitter may have a wavelength above 390 nm (i.e., 390 nm or longer). As such, the reference anticipates the claim, and because Vriens does teach a portion of the range, whether Vriens

discloses that the upper wavelength limit must be 420 or shorter is immaterial to the issue of whether Vriens anticipates the claims.

b. Applicant has argued that none of Vriens, the Phosphor Handbook nor Vecht teach, suggest or motivate how or whether to choose the specific phosphor wavelengths claimed. This argument is not persuasive because, as was explained previously, Vriens teaches that the specific phosphor(s) chosen should emit the color desired, such as red, green, blue or white. The Phosphor Handbook and Vecht teach various ones of the phosphors claimed and teach what particular colors these phosphors emit. As such, both of the Phosphor Handbook and Vecht are fully sufficient in teaching the specific phosphors, and Vriens provides fully sufficient motivation as to why the particular phosphors taught by the Phosphor Handbook or Vecht would be desired.

c. Applicant has argued that the Phosphor Handbook does not teach some of the phosphors that are set forth in the claims. The fact that the Phosphor Handbook does not teach some of the phosphors listed in the respective claims' Markush groups is immaterial because the Phosphor Handbook teaches at least one of the phosphors for each of the listed claims' Markush groups. It is well-settled that a reference (or references) do not need to teach all of the Markush elements to anticipate a claim or render it obvious.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister,** at **(703) 306-9165.** The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

B. William Baumeister

Patent Examiner, Art Unit 2815

November 11, 2002

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800